Income inequality not gender inequality positively covaries with female sexualization on social media

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Publicly displayed, sexualized depictions of women have proliferated, enabled by new communication technologies, including the internet and mobile devices. These depictions are often claimed to be outcomes of a culture of gender inequality and female oppression, but, paradoxically, recent rises in sexualization are most notable in societies that have made strong progress toward gender parity. Few empirical tests of the relation between gender inequality and sexualization exist, and there are even fewer tests of alternative hypotheses. We examined aggregate patterns in 68,562 sexualized self-portrait photographs ("sexy selfies") shared publicly on Twitter and Instagram and their association with city-, county-, and cross-national indicators of gender inequality. We then investigated the association between sexy-selfie prevalence and income inequality, positing that sexualization—a marker of high female competition—is greater in environments in which incomes are unequal and people are preoccupied with relative social standing. Among 5,567 US cities and 1,622 US counties, areas with relatively more sexy selfies were more economically unequal but not more gender oppressive. A complementary pattern emerged cross-nationally (113 nations): Income inequality positively covaried with sexy-selfie prevalence, particularly within more developed nations. To externally validate our findings, we investigated and confirmed that economically unequal (but not gender-oppressive) areas in the United States also had greater aggregate sales in goods and services related to female physical appearance enhancement (beauty salons and women's clothing). Here, we provide an empirical understanding of what female sexualization reflects in societies and why it proliferates.

income inequality | sexualization | gender inequality | objectification | inequality

Cultural sexualization is a trend encompassing the sexual objectification of women and girls in mass media, shifts toward more permissive sexual attitudes, and preoccupation with sexual identities (1). Prominent features include depictions of reproductive-aged women in overtly revealing clothing and generalized concerns about the sexualization of young girls (2). Ample evidence shows that Western culture is becoming more sexualized (3, 4), but disagreement surrounds the extent to which this trend reflects male or female interests (1, 5, 6). The degree to which sexualization differs from women's other appearance-enhancing behaviors, such as using cosmetics, fashion, and brand-name accessories to enhance attractiveness, is also debated (3).

Sexualization is a multilevel phenomenon that is influenced by and occurs within structural and sociopsychological contexts. At the structural level, appearance-related consumption can be a locus of female individualization that helps channel women into self-determined individuals (7). By deemphasizing religion in the formulation of core moral values (8), modernity further enables women to reject traditional notions of femininity as demure or asexual. At social and psychological levels, gender oppression is widely seen to create a culture where women are treated as, and treat themselves as, sexual objects valued predominantly for their physical attractiveness and use by others (6, 9–11). Self-objectification—a reductive psychological process whereby women value their physical appearance above their other qualities—has been reliably linked to sexist ideologies that legitimize female subordination (12, 13). Sexist ideologies also positively covary with men's tendency to treat women as sexual objects (14), suggesting that gender inequality increases sexualization by elevating the tendency to sexualize (i.e., supply) as well as desire for female sexualization (i.e., demand).

The notion that sexualization manifests in response to gender oppression is the dominant sociopsychological framework for understanding the prevalence of sexualization across cultures (6, 9–11). Contrary to simple predictions that sexualization reflects female subordination, however, stands the observation that the rise in sexualization over the last half century has occurred during a period of falling gender inequality (15). Indeed, the argument has been made that sexualization has increased in Western culture as a reaction to the gains in women's social and economic power since the 1960s, erecting standards of attractiveness as a secondary barrier to women's progress (11). If this is true, then sexualization should increase as gender inequality falls. However, direct evidence of associations between gender inequality and sexualized culture or between gender inequality and female sexualization remains sparse—especially in non-Western, -educated, -industrialized, -rich, and -democratic (non-WEIRD) nations. Here, we test for such

Significance

Female sexualization is increasing, and scholars are divided on whether this trend reflects a form of gendered oppression or an expression of female competitiveness. Here, we proxy local status competition with income inequality, showing that female sexualization and physical appearance enhancement are most prevalent in environments that are economically unequal. We found no association with gender oppression. Exploratory analyses show that the association between economic inequality and sexualization is stronger in developed nations. Our findings have important implications: Sexualization manifests in response to economic conditions but does not covary with female subordination. These results raise the possibility that sexualization may be a marker of social climbing among women that track the degree of status competition in the local environment.

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associations at three spatial scales: US city, US county, and cross-national.

Unlike gender inequality, income inequality has risen steadily over the past 40 y (16), and a socioecological approach suggests that high income-inequality environments foster female sexualization. Structural inequalities in income are correlated with numerous indicators of status competition (17, 18). At the sociopsychological level they motivate self-enhancement and status striving (19, 20) as well as producing status anxiety among people throughout the social hierarchy (18). Beauty is highly valued in women across cultures, and physical and sexual attractiveness confer women many benefits (21). Likewise, women frequently compete with one another by enhancing their physical appearance and wearing revealing clothing (22, 23). To the extent that sexualization reflects appearance-related competition among women, high income inequality should create an environment in which women engage in more sexualization.

To test whether gender inequality or income inequality is associated with sexualization, we obtained the entire population of public sexualized self-portrait photography social media posts ("sexy selfies") on Twitter and Instagram over a 1-mo period worldwide (453,335 posts). Both men and women use social media for self-presentation (24), and social media posts that emphasize the user's own sexual attractiveness are one form of female sexualization (25). Of these posts, 68,562 were geolocated by our location-matching algorithm and aggregated to a US city (n = 5,567 cities), to a US county (n = 1,622 counties), or to a nation worldwide (n = 113 nations) (descriptive statistics are in *SI Appendix*, Table S1). We then gathered gender-inequality and income-inequality data for these geographic areas, and regression-based analyses determined associations between gender inequality, income inequality, and sexy selfies. To validate our investigation, we also measured associations between beauty salon and women's clothing store expenditure in US cities and these same indicators of gender inequality and income inequality.

Both the gender-inequality and income-inequality hypotheses we outline are multilevel hypotheses. They predict that sexualized and physical appearance-enhancing behaviors result from structural inequalities which affect psychological processes and guide individual decisions to optimize behavior. Data were analyzed at the city, county, and nation levels, as these spatial scales were those on which variation in income inequality, gender inequality, and sexy selfies were measured. We aggregated sexy selfies to each spatial scale because our individual data were truncated (we observed only sexy-selfie posts and not any posts that were not sexy selfies). A validation check of 1,500 posts indicated that 62% of posts were from female users, and 90% of these posts were original selfies of women. In contrast, 87% of the remaining posts from male users were of women and not men, with 54% of these posts resulting from men resharing posts originally posted by women (see *SI Appendix* for details). In total, just over three quarters of all posts entailed women posting genuine selfies or men (and very occasionally, women) reposting them.

Associations Between Sexy Selfies, Gender Inequality, and Income Inequality

Method. Using mixed negative binomial regression, US city and county analyses regressed the aggregated count of sexy selfies in a city or county onto five variables reflecting inequality between men and women in health, education, and the labor market [the same domains used to calculate the United Nations Gender Inequality Index (GII) (26)] either together (model 1) or as a composite score (see *SI Appendix*, pp. 88–96) and then onto one variable measuring income inequality, the Gini coefficient (model 2). To account for the fact that areas with larger populations would naturally have more social media posts, all models were offset by population. Offsets terms function as exposure variables (27), ensuring that models adjusted for local social media volume. In subsequent models we combined gender-inequality and income-inequality predictors to compare effect sizes (model 3) and then added potential confounders to test robustness (model 4). The confounders—median female income and age, female employment rate, female educational attainment, and urbanization—were chosen because sexual behavior and social media usage vary by socioeconomic class and age (28–30), and rural areas have poorer internet connectivity. We also included the operational sex ratio (the local ratio of unmarried men to unmarried women), as it operationalizes a form of reproductive competition (31). All data were 5-y estimates gathered from the 2016 US Census Bureau American Community Survey (ACS) (32). Because all data were publicly available, no ethics approval was required.

Cross-national analyses also used negative binomial regression, regressing the aggregated count of sexy selfies in each of 113 nations onto gender inequality (model 1), income inequality (model 2), and then both variables combined (model 3). Cross-national analyses were offset by a composite score reflecting population and English-language social media posting frequency (as we tracked keywords only in English). All analyses controlled for human development, operationalized via a composite score reflecting gross domestic product per capita, median age, life expectancy, urbanization, and the Human Development Index score from the United Nations (26). We operationalized gender inequality via a composite score of three variables measuring women's physical security, inequality in family law between men and women, and the presence of a government framework for gender equality, all from The WomanStats Database (33) (details are given in *SI Appendix*). The WomanStats Database is the most comprehensive database on the status of women cross-nationally, containing over 170,000 data points on 350 variables related to nine aspects of women's situation and security for 175 nations worldwide. We did not use the GII because of high collinearity with the human development composite measure, $r(107) = -0.86$, $P < 0.001$, variance inflation factors (VIF) = 4.43. Our gender-inequality measure showed a large correlation with the GII, $r(107) = 0.78$, $P < 0.001$, and a relatively smaller correlation with our human development composite, $r(107) = -0.68$, $P < 0.001$, $VIF = 1.04$. Nevertheless, our results are robust when using the GII.

Our analytic strategy first tested the suitability of Poisson, negative binomial, and zero-inflated negative binomial distributions without random effects by comparing Akaike information criteria (AIC) values and using Vuong's test (34). Negative binomial models provided the best fit in all instances and were retained for future analyses. To address potential problems of spatial autocorrelation [i.e., Galton's problem (35)], we tested whether a random intercept for US state (city and county analyses) and the 20 United Nations micro world regions (26) improved the AIC in all analyses. We also tested random slopes for each predictor, again retaining them when they significantly improved the model fit. All predictors were z-score standardized to account for scale variability, and we excluded cases with large residuals as model outliers (±2.96 standardized Pearson residuals; <2.0% of cases were removed). We also examined VIFs to check collinearity, confirming that all VIFs were below 2.0 and no substantial collinearity was present. All models demonstrated superior fits to their null models excluding Nation model 1 (see *SI Appendix* for model fit statistics). Output of all final models is given in *SI Appendix*.

Results. Table 1 shows the unique and comparative relationship between gender inequality, income inequality, and sexy selfies at the US city, US county, and cross-national level. Contra the prediction that female subordination drives sexualization, we found only small, inconsistent, and mostly not statistically significant associations between gender inequality and sexy selfies across US cities and counties. Income inequality, however, showed larger, statistically significant associations with sexy-selfie posting in

every model and was always robust to the addition of confound variables. Using the most conservative estimates from model 4, the incidence rate ratio for sexy selfies as a function of income inequality varied between 1.31 and 1.34. Thus, assuming all other factors are held constant, for every one-SD increase in income inequality, the expected count of the number of sexy selfies in a city or county given its population increases by 31–34%. We conducted an additional 66 analyses to test the appropriateness of our methods and the validity of our results, including testing whether results replicated in a sample of strictly unique users (as the models reported here did not account for user-level effects). The great majority of the additional analyses (65/66; see *SI Appendix*) showed effects of consistent size and significance to those depicted here.

At the cross-national level, sexy-selfie prevalence was significantly associated with income inequality but not with gender inequality (Table 1). We further analyzed whether associations between sexualization, gender inequality, and income inequality varied as a function of each nation's degree of human development (model 4). A significant interaction between human development and income inequality revealed that the association between income inequality and sexy-selfie prevalence was stronger in more developed nations. The positive interaction between development and income inequality, which predicts the prevalence of sexy selfies, is shown in *SI Appendix*, Fig. S1.

We conducted 20 additional robustness tests at the cross-national level, including testing whether effects were robust to the exclusion of WEIRD nations. In some models, the development × gender inequality coefficient was larger than that reported here (showing that the effect of gender inequality on sexualization was more pronounced in underdeveloped nations), although it was always relatively smaller than the development × Gini coefficient. The interaction between income inequality and development was robust in every analysis, although the main effect of income inequality was sometimes no longer statistically significant. Thus, at the cross-national level, the most reliable finding is that the association between income inequality and sexualization is stronger in more developed countries.

Predictors of Beauty Salon and Women's Clothing Store Expenditure

Method. To externally validate the findings based on sexy selfies, we investigated the associations between beauty salon and women's clothing store expenditure, gender inequality, and income inequality. Appearance management and female beautification strategies offer distinct but converging indices of the cultural emphasis placed on women's physical and sexual attractiveness. We measured the relationship between income inequality, gender inequality, and the value of all sales, shipments, receipts, revenue, or business done in US beauty salons [North American Industry Classification System (NAICS) 812112] and women's clothing stores (NAICS 448120) from the 2012 US Economic Census. The census provided beauty salon data on 2,498 geographic areas in the United States, 1,980 of which corresponded to US cities, boroughs, towns,

Table 1. Negative binomial regressions of sexy selfies onto gender inequality, income inequality, and confounders at the US city, US county, and national level

	Model 1		Model 2		Model 3		Model 4	
Variable	*B*	SE	*B*	SE	*B*	SE	*B*	SE
Panel A: US city level								
n	5,400		5,513		5,398		5,375	
GI (health)	−0.07	0.06			−0.09	0.06	−0.12*	0.06
GI (reproductive health)	0.05	0.07			0.04	0.07	−0.01	0.07
GI (college)	0.10	0.06			0.10	0.07	0.15†	0.08
GI (management)	0.04	0.07			0.03	0.07	0.09	0.06
GI (income)	−0.15**	0.05			−0.12*	0.05	−0.13	0.06
Income inequality			0.31***	0.05	0.33***	0.05	0.29***	0.06
Female edu/empl/inc							−0.22*	0.09
Female median age							−0.23**	0.08
Operational sex ratio							−0.09	0.07
Urbanization							0.21	0.14
Panel B: US county level								
n	1,588		1,601		1,587		1,535	
GI (health)	−0.13	0.16			−0.15	0.15	−0.22	0.15
GI (reproductive health)	−0.20	0.18			−0.14	0.18	−0.21	0.23
GI (college)	0.29*	0.14			0.33*	0.14	<0.01	0.16
GI (management)	−0.03	0.11			−0.03	0.11	<0.01	0.12
GI (income)	−0.24*	0.10			−0.01	0.10	<0.01	0.11
Income inequality			0.47***	0.06	0.49***	0.07	0.27*	0.08
Female edu/empl/inc							−0.17	0.11
Female median age							−0.20*	0.10
Operational sex ratio							−0.05	0.19
Urbanization							0.95***	0.13
Panel C: nation level								
n	108		110		108		107	
Human development	1.18***	0.24	0.88***	0.15	1.21***	0.24	1.20***	0.23
GI	0.41†	0.23			0.33	0.22	0.06	0.25
Income inequality			0.28*	0.14	0.28*	0.14	0.55**	0.18
HD × GI							−0.19	0.19
HD × income inequality							0.60**	0.23

Fit statistics are provided in *SI Appendix*; models here have different sample sizes. *B*, standardized regression coefficient. HD, human development; GI, gender inequality; edu/empl/inc, female education, employment, income composite score. Probability values: ***$P < 0.001$; **$P < 0.01$; *$P < 0.05$; $^{\dagger}P < 0.10$.

census-designated places, or villages (leaving $n = 1{,}980$). Women's clothing data were provided for 1,503 geographic areas, 1,298 of which corresponded to other city-level US locations (leaving $n = 1{,}298$).

All data were 5-y estimates gathered from the 2012 US Census Bureau ACS (32), and measures of independent variables were identical to those listed for sexy-selfie analyses. Using separate mixed linear regression models for each expenditure type, we regressed expenditures onto gender inequality (model 1), income inequality (model 2), both predictors combined to compare effect sizes (model 3), and a final model with all confounds (model 4). All models also controlled for population, as total expenditures are limited by the number of people living in a geographic area. We retained random intercepts and slopes when their inclusion improved the model fit, *z*-score standardized all predictors to account for scale variability, and excluded cases with large residuals as model outliers (±2.96 standardized Pearson residuals; <2.0% of cases were removed). VIFs confirmed that no substantial collinearity was present.

Results. Results validated and conceptually replicated the sexy-selfie findings. As shown in Table 2, areas with greater income inequality had greater sales in beauty salons and women's clothing stores. In contrast, most gender-inequality variables were not significantly associated with either form of spending. There was a positive association between gender inequality in educational opportunity and both types of spending, but effects were not robust to the inclusion of confounders in the beauty salon expenditure model. There was also an association between gender inequality in reproductive health and beauty salon expenditure, but in the opposite direction to predictions. Once confounders were accounted for, the sizes of the associations between beauty salon expenditure, women's clothing store expenditure, and income inequality were larger than the sizes of all associations between these outcomes and gender equality. Only income inequality and population were significantly associated with beauty salon and women's clothing store expenditure across all models. An additional 24 analyses tested the robustness of these results; all yielded findings consistent with those reported here (*SI Appendix*).

Discussion

The dominant sociopsychological framework for understanding the growing prevalence of sexualization across cultures posits that it reflects a form of female subordination, manifesting in environments that are oppressive to female interests. An alternative—although not necessarily exclusive—view holds that sexualization marks the degree of status competition among women and predicts that, like other indicators of status competition (18), it may positively co-occur with income inequality. We tested these two ideas using analyses of social media posts at three spatial scales and real-world spending in beauty salons and women's clothing stores, finding that both sexualization and female appearance enhancement were more prevalent in areas of high economic inequality.

The small, inconsistent, and largely nonsignificant association between gender inequality, cultural sexualization, and female appearance enhancement is contrary to widespread and popular theories concerning the sociostructural and psychological causes of female sexualization (6). Our results do not support the prediction that female sexualization and appearance management arise most often in gender-oppressive environments, especially once income inequality and confounders are accounted for. Likewise, we find no consistent evidence for the prediction that an increased cultural emphasis on beauty arises from women's progress toward gender parity [*sensu* ref. 11]. These findings highlight that the influence of gender oppression on the prevalence of female sexualization and appearance enhancement has been overstated, especially within developed economies.

Why do income inequality and sexualization co-occur? In addition to income inequality breeding status competition (18, 19), we suggest that it strengthens incentives operating in the sexual marketplace. Physical attractiveness enhances a woman's value as a mate (21) and is thus an area of female–female competition (22). For men, however, higher income enhances quality as a prospective mate (21), and income inequality corresponds with variation in the quality of male mates available. In nonhuman animal species, intrasexually competitive behavior among females increases when male mate quality is highly variable (36). Conditions in which some men possess a disproportionate share of the wealth may thus incentivize women to sexualize and enhance their physical appearance to out-do their fellow competitors and attract the highest-quality men available at the top of the income distribution. (A recently accepted paper shows convergent evidence: Negative economic shocks narrow the pool of suitable men, thus intensifying mating competition among women by increasing the share of unwed women and mothers. See ref. 37.) A robust relationship between income inequality and intrasexual competition has been empirically established among men (38). Although sexualization is not adaptive in all conditions and cultures, our results may reflect a parallel association among women.

Findings suggest that women are sensitive to income inequality when they sexualize or enhance their appearance, enacting these behaviors in environments where competition is fierce and attracting a high-quality mate confers relatively great advantages. The conditional nature of these behaviors and the lack of evidence that gender inequality drives sexualization raises the possibility that sexualization may be an agentic and strategic act for some women (see also ref. 39). Although countries lacking gender equity may be hostile to female emancipation and empowerment, appearance enhancement can provide women one avenue for attaining reproductively relevant benefits in environments where few other avenues exist. These results suggest that female sexualization and physical appearance enhancement can be both intentional and competitive pursuits women engage in when out-doing one's competitors offers relatively great benefits.

Confounder models compared associations between gender inequality, income inequality, sexualization, and physical appearance enhancement after controlling for female education level, median age, median income, the female employment rate, the operational sex ratio, and urbanization. Consistent with past work showing that sexualization and social media use is more common in reproductive-age women (29), we find that regions with younger women have more sexy-selfie posts. We also find that areas with poorer, uneducated, and unemployed women have more sexy-selfie posts, whereas these same regions have fewer aggregate sales in beauty salons and women's clothing stores. The association between female poverty, low education, unemployment, and sexualization may reflect a general association between female poverty and early sexual onset (40). The reverse association with beauty salon and clothing store spending is less surprising, given that these items are luxury goods for which expenditure shares are expected to rise with disposable income. We did not find any association between sexualization or physical appearance enhancement and the operational sex ratio, suggesting that the relative abundance or scarcity of mates is not associated with these outcomes.

The effect of inequality on behavior is amplified by local competition (41). Our findings are consistent with this notion: Our strongest effects for income inequality were at the city level. Urban areas may also be associated with increased sexualization for other reasons. Although the psychological and socioecological associations of urbanization are complex (42), urbanization is linked to increased sexual expression and the globalization of sexuality (43) as well as individualistic behaviors aimed at self-promotion (44). Future research on the individual-level drivers of sexualization

Table 2. Linear regression models predicting US beauty salon and women's clothing store expenditure

	Model 1		Model 2		Model 3		Model 4	
Variable	*B*	SE	*B*	SE	*B*	SE	*B*	SE
Panel A: beauty salon expenditure								
n	1,942		1,970		1,942		1938	
Population	0.35***	0.02	0.19***	0.01	0.33***	0.03	0.35***	0.03
GI (health)	−0.01	0.02			−0.01	0.02	<0.01	0.02
GI (reproductive health)	−0.07**	0.02			−0.07**	0.02	−0.05†	0.03
GI (college)	<0.01	0.02			0.01	0.02	<0.01	0.03
GI (management)	0.01	0.02			0.01	0.02	<0.01	0.02
GI (income)	−0.01	0.02			−0.01	0.02	−0.02	0.03
Income inequality			0.06***	0.01	0.11***	0.02	0.12***	0.02
Female edu/empl/inc							0.27*	0.11
Female median age							0.02	0.02
Operational sex ratio							<0.01	0.03
Urbanization							−0.04†	0.02
Panel B: women's clothing store expenditure								
n	1,244		1,294		1,243		1244	
Population	0.13***	0.01	0.12***	0.01	0.12***	0.01	0.14***	0.01
GI (health)	<0.01	0.01			0.01	0.01	0.01	0.01
GI (reproductive health)	−0.04***	0.01			−0.038***	0.01	−0.03**	0.01
GI (college)	0.01	0.01			0.02*	0.01	0.02**	0.01
GI (management)	<0.01	0.01			−0.01	0.01	−0.01	0.01
GI (income)	<0.01	0.01			−0.01	0.01	−0.01	0.01
Income inequality			0.04***	0.01	0.044***	0.01	0.04***	0.01
Female edu/empl/inc							0.08*	0.03
Female median age							0.02**	0.01
Operational sex ratio							−0.01	0.01
Urbanization							−0.02**	0.01

B, standardized regression coefficient. Edu/empl/inc, female education, employment, income composite score; GI, gender inequality. Probability values: ***$P < 0.001$; **$P < 0.01$; *$P < 0.05$; $^{\dagger}P < 0.10$. Beauty adjusted R^2: $R^2_{\text{model 1}} = 0.10$; $R^2_{\text{model 2}} = 0.35$; $R^2_{\text{model 3}} = 0.12$; $R^2_{\text{model 4}} = 0.12$. Clothing adjusted R^2: $R^2_{\text{model 1}} = 0.20$; $R^2_{\text{model 2}} = 0.19$; $R^2_{\text{model 3}} = 0.23$; $R^2_{\text{model 4}} = 0.25$. Full details for all models are given in *SI Appendix*.

should shed further light on the association between sexualization, urbanization, and development.

The two main theories we tested were derived, at least in part, from an understanding of individual-level psychological processes. The gender equality hypothesis contained a city-/county-/nation-level component, to the effect that places where gender equality was high were expected to show lower sexualization. In large part, our hypotheses concerned what individuals do under a given context. Our data, however, are intelligible only at the aggregate levels of city/county/nation. We cannot analyze our data at the individual level, nor can we confirm the individual-level mechanisms. Geographic analyses and cross-cultural correlations are limited in what they can tell us about individual processes (45), and our speculations regarding female competition would be strengthened by confirmation at the individual level. An examination of the precise mechanisms through which income inequality shapes female competition would constitute an important and welcome contribution to our understanding of women's behavior and of sexualization.

Although our findings replicate cross-nationally, especially in developed economies, cross-cultural analyses also have many limitations. There is no guarantee that measures obtained in different populations reflect the same construct (46), and cross-national indices are often error prone (47). Because confounding can occur, and imperfect measurement can affect conclusions drawn after adjusting for confounders, we cannot rule out the presence of heterogeneous effects: The positive relationship between income inequality and sexualization may not hold for every individual, group of individuals or at every spatial scale. Although the overall relationship between income inequality and sexualization is consistently positive at several scales, future research should delineate causal pathways between income inequality and sexualization.

The great majority of sexy selfies in our dataset were posted by women, although some of these posts resulted from men sharing sexy selfies originally posted by women. Our findings largely replicate when these reposts are excluded and are validated using patterns of real-world spending in arenas relevant to female appearance enhancement, but our effects are also partially attributable to men disseminating sexualized photographs of women. Because most male posts resulted from men resharing posts that were originally posted by women, our observations may reflect an equilibrium outcome resulting from an interaction between supply and demand factors. Men may share more posts of sexualized women in economically unequal environments because these posts are more readily available (i.e., oversupply) or, alternatively, income inequality may exert an independent influence on male demand for female sexualization. We encourage future work to parse out these market characteristics.

Conclusion

We find that female sexualization and physical appearance enhancement are positively associated with income inequality and generally are unassociated with gender inequality. The relationship between income inequality and female sexualization is particularly strong and robust in more developed countries and across US cities and counties. Our findings raise the possibility that sexualization and appearance enhancement are markers of female competition, occurring in environments in which incomes are unequal and status competition is highly salient. Understanding that cultural sexualization is reliably associated with economic inequality provides insight into its origins, shedding light on the ecological conditions that perpetuate this controversial cultural trend.

Materials and Methods

We used a hashtag generator (all-hashtag.com/) to generate 100 hashtags containing the words "sexy" or "hot" and 17 hashtags related to the term "selfie" and then identified their popularity using a hashtag popularity search engine (hashtagify.me/). We retained the 31 most popular sexy words and six selfie words for social media tracking (terms are provided in *SI Appendix*). We tracked the entire population of Twitter and Instagram posts which contained at least one sexy word and one selfie word, excluding posts containing "porn," "xxx," or "adult." This procedure tracked 453,335 posts worldwide between 8 June 2016 and 7 July 2016, 103,811 of which had location field text available. Our geolocating algorithm matched 68,582 of these posts to a US city, US county, or nation using the geolocating procedure listed in *SI Appendix*. Just over half (58.1%) of the posts were tracked from Twitter; the remainder were from Instagram.

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